Space Weather Forecast

Issued on Wednesday 23 October 2024 at 01:09 Local

This forecast provides a four-day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Increasing chance of radio blackouts.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Activity was low and confined to Common-class flares.

There are seven numbered sunspot regions on the visible disc, and a new region rotating onto the southeast limb. None of the regions are especially large, magnetically complex or showing any significant changes. However, AR3859, which is approaching the west limb, has historically had a moderately complex magnetic structure.

A filament eruption was observed in centre disk around 22/0500UTC but no coronal mass ejection (CME) has yet been identified. Another filament eruption occurred around 22/1715 UTC in the northwest quadrant. This filament was small but an associated CME was generated. Analysis is currently being undertaken.

Solar Wind / Geomagnetic Activity: Solar winds were indicative of a slow regime. The interplanetary magnetic field was at Background levels, with the north-south component negative until the evening, then becoming positive. The net result of the above solar wind measures was Quiet to Unsettled.

Energetic Particles / Solar Radiation: No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Activity is likely to be Low, with a chance of Moderate activity from isolated Moderate-class flares initially, until new or returning regions rotate onto the visible disc. Several notable active regions may arrive from behind the eastern limb, potentially increasing the solar activity later in the period.

Solar Wind / Geomagnetic Activity: Currently there are no Earth-directed CMEs in the forecast, although modelling of the CME from the small filament eruption in the northwest on the 22nd Oct is awaited. Initial expectations are that the bulk of the CME will not be Earth directed. A weak solar wind enhancement may become established today from a coronal hole feature, although this is now looking increasingly unlikely. More likely is the arrival of a solar wind enhancement from a coronal hole which is almost centre disc, later in the forecast period. Overall background solar winds are expected to predominate, with mainly Quiet to Unsettled geomagnetic activity. and a

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slight chance of Minor geomagnetic storm levels being reached at times later in the forecast period.

Energetic Particles / **Solar Radiation:** No solar radiation storms are expected.

Geomagnetic Storms

Geomagnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	**G1 to G2**	No	10	1	20	10
Strong	**G3**	No	1	1	1	1
Severe	**G4**	No	1	1	1	1
Extreme	**G5**	No	1	1	1	1

Radio Blackouts - X-Ray Flares

X-Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	**R1-R2 (M Class)**	No	30	40	60	60
Very Active	**R3-R5 (X Class)**	No	5	10	10	10

Solar Radiation Storms (High Energy Protons)

Radiation Storms Probability (Exceedance)	Level ($cm^{-2}sr^{-1}s^{-1}$)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	**≥ S1**	No	5	5	5	5
Very Active	**≥ S3 ***	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and/or 50 MeV ≥ 10pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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